



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,887	10/31/2003	Kwang-Wook Kim	0630-1864P	9001
2292	7590	06/06/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			KRISHNAMURTHY, RAMESH	
			ART UNIT	PAPER NUMBER

3753

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/697,887

Applicant(s)

KIM ET AL.

Examiner

Ramesh Krishnamurthy

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3 - 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3 - 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

This office action is responsive to amendment filed 03/09/2006.

**Claims 3 – 20 are pending.**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 4 – 6 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by DE 75 13 261.

The document DE '261 (see the translation enclosed) discloses a discharging valve assembly for a reciprocating compressor comprising:

A discharge cover (4) coupled with a front frame (1) (it is noted that the limitation “so as to cover a cylinder in which a piston is inserted” is functional in nature and also the limitation is considered to be inherent to the disclosure of DE '261 as it pertains to a reciprocating compressor);

A discharging valve (2) is inserted in the discharging cover; An unbalancedly and elastically supporting means comprising a spring (3) that is supported on one side by a sloping surface of a sloping (angle of the sloping surface  $\alpha$ ) inner side surface of the discharging cover and its other side being connected to the discharging valve (2). A side of the spring with greater elastic stiffness (page 5 of the translation, lines 5 – 7) is positioned at a sloping surface side (near (5) in Fig. 1) having the nearest distance to the contact surface of the cylinder (near (1)) and the side of the spring with lesser

Art Unit: 3753

elastic stiffness is positioned at a sloping surface having the furthest distance from the contact surface of the cylinder.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 8, 12, 13, 14 – 16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 75 13 261.

Regarding claims 3 and 13, it is noted that DE'261 document discloses a sloping surface for the cover, but does not explicitly state the sloping angle other than stating that it is small (page 4, last line – page 5, first line of the translation). The document DE'261 clearly discloses that it is the sloping surface that provides the unbalanced force on the valve member resulting in the low noise operation. To provide a specific angle such as greater than 4 degrees does not alter the functioning principle of the low noise

Art Unit: 3753

operation. Thus, the limitation, sloping angle of the sloping surface of the discharging cover is more than four degrees is considered to be a design expedient over those features disclosed in DE'261 in that it neither provides any new and/or unexpected result nor solves any stated problem.

Regarding claim 12, it is noted that providing a sloping surface on the discharging valve as opposed to having it on the cover, is a mere reversal of parts and the courts have generally held that reversal of parts is an expedient that is obvious to one of ordinary skill in the art. *In re Gazda*, 219 F.2d 449, 104 USPQ 400 (CCPA 1955). In the instant case, such a reversal would not change the operation of the DE '261 device since the spring force on the valve member (2) would still remain unbalanced as before and thus the functional equivalence of the two arrangements would allow one of ordinary skill in the art at the time the invention was made to use either arrangement.

6. Claims 7, 11, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 75 13 261 as applied to claims 4 – 6 and 10 above, and further in view of Lee et al. (US 2002/0150488A1).

The document DE '261 discloses the claimed invention with the exception of explicitly disclosing a rotation prevention protrusion disposed on the sloping surface.

Lee et al. discloses (Figs, 11 A, B for example) a protrusion disposed on the inner surface of the cover for the purpose of securing the spring so as to prevent rotation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in DE '261 a protrusion disposed on the inner surface of the cover for the purpose of securing the spring so as to prevent rotation as evident from Lee et al..

Also, in Lee et al., the discharging hole is located on one side of the discharging cover for the purpose of obtaining a desired flow therethrough since placement of the discharge hole at a specific location on the cover would dictate the flow path from the inlet. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in DE '261 a discharging hole on side of the cover for the purpose of achieving a desired flow therethrough as evident from Lee et al.

Regarding claims 11 and 20, it is noted that the Lee et al. discloses (Figs. 7 – 8B) a conical spring (105) for the purpose of preventing a part of the spring from impacting the next part during compression (Col. 2, paragraph [0024], lines 13 – 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in DE '261 a conical spring for the purpose of preventing a part of the spring from impacting the next part during compression, as recognized by Lee et al.

### ***Response to Arguments***

Applicant's arguments filed 03/09/2006 have been fully considered but they are not persuasive. Applicant's argument concerning the characterization of Figs. 1 – 4 as Admitted Prior Art (APA) has been noted and is deemed unpersuasive since both the specification and the Figures label the matter therein as 'conventional' which is taken to mean conforming to established practice or accepted standards or customary

Art Unit: 3753

(Webster's II New Riverside University Dictionary). Additionally, Lee et al. does disclose the discharging hole is formed on one side of the discharging cover, thereby establishing this claimed feature as known in Prior Art. However applicant's argument concerning the APA issue has been rendered moot by the new grounds of rejection set forth above. As regards the applicant's argument concerning the motivation of reversal of parts in regard to providing a sloping valve surface, it is noted that the motivation comes from the recognition of functional equivalence of the two arrangements. As regards claims 15 and 16, it is noted that with a sloped valve surface the spring stiffness is different on the two sides of the spring with the surface whose distance from the compression plane of the discharging valve is smaller would have the smaller elastic stiffness and the other side would have the large stiffness.

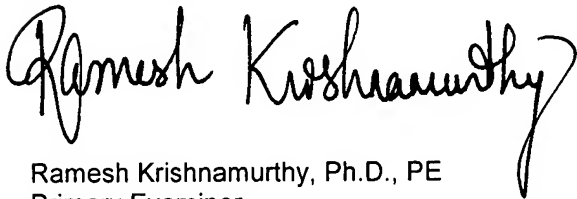
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (571) 272 – 4914. The examiner can normally be reached on Monday - Friday from 10:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel, can be reached on (571) 272 – 4929. The fax phone number for the organization where this application or proceeding is assigned is (571) 273 – 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

Art Unit: 3753

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, reading "Ramesh Krishnamurthy". The signature is fluid and cursive, with the first name "Ramesh" and last name "Krishnamurthy" clearly legible.

Ramesh Krishnamurthy, Ph.D., PE  
Primary Examiner  
Art Unit 3753